

Department of Physiology and Pharmacology
PHYSPHARM 4530B Skeletal Health and Disease

Course outline for Winter 2024



Although this academic year might be different, Western University is committed to a **thriving campus**. We encourage you to check out the [Digital Student Experience](#) website to manage your academics and well-being. Additionally, the following link provides available resources to support students on and off campus: <https://www.uwo.ca/health/>.

1. Technical Requirements:



Stable internet connection



Laptop or computer



Working microphone



Working webcam

2. Important Dates:



Classes Resume	Reading Week	Classes End	Study days	Exam Period
January 8	February 17–25	April 8	April 9-10	April 11–31

* March 7, 2024: Last day to drop a second-term half course without penalty

3. Contact Information



Course Coordinator	Contact Information
Matthew W. Grol	Use OWL message or email mgrol2@uwo.ca

Instructor(s)	Contact Information
Tom Appleton	Tom.Appleton@sjhc.london.on.ca
Cheryle Séguin	cheryle.seguin@schulich.uwo.ca
Teaching Assistant	
Jeff Hutchinson	jhutch48@uwo.ca

4. Course Description and Design

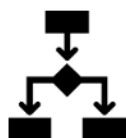
Musculoskeletal disorders such as osteoarthritis, osteoporosis and disc degeneration have huge impacts on individuals' quality of life and the healthcare system, especially as our population ages. Recent evidence shows that events that are physiologically linked to the skeleton can drive pathology in other tissues, such as the mineralization of blood vessels in atherosclerosis. This course will provide an overview of the development and biology of skeletal tissues, introduce current techniques used to study skeletal physiology and examine the biological bases of musculoskeletal diseases and their treatments.

Requisites: Phys 3120 (Human Physiology); Phys 3140A (Cellular Physiology)

Delivery Mode/ Location: In person/ Dental Sciences Building, Rm 2016

Timetabled Sessions

Component	Date(s)	Time
Lecture & Student debate presentations	Wednesdays	9:30-11:20 am



- Asynchronous pre-work must be completed prior to sessions.
- Attendance at in person sessions is required.

All course material will be posted to OWL: <http://owl.uwo.ca>. Any changes will be indicated on the OWL site and discussed with the class.

If students need assistance, they can seek support on the [OWL Help page](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

[Google Chrome](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#).

5. Learning Outcomes



Upon successful completion of this course, students will be able to:

- Understand the structure and function of the musculoskeletal system and its contributions to systemic health.
- Understand the pathophysiology of common musculoskeletal disorders.
- Understand basic research methods in this area.
- Interpret and design experiments basic science experiments in musculoskeletal health.
- Critically assess basic research publications relevant to musculoskeletal health.

6. Course Content and Schedule



WEEK	DATE	TOPIC	INSTRUCTOR
1	Jan 10	Introduction to the Skeleton and Skeletal Development	Grol
2	Jan 17	Bone Biology and Metabolic Bone Diseases	Grol
3	Jan 24	Cartilage Biology and Pathology of Osteoarthritis	Appleton
4	Jan 31	Disorders of Ectopic Ossification Student debate #1 (cartilage OA)	Séguin / Grol
5	Feb 7	Student debate #2 (bone biology/pathology) Student debate #3 (ectopic bone formation)	Séguin / Grol
6	Feb 14	Tendon and Muscle Biology	Grol
7	Feb 21	No Class, Reading Week	
8	Feb 28	MIDTERM – In class	
9	Mar 6	Spine Biology and Common Spine Disorders	Séguin
10	Mar 13	Student debate #4 (tendon biology) Student debate #5 (IVD development)	Grol
11	Mar 20	Skeletal Regeneration and Tissue Engineering	Grol
12	Mar 27	Musculoskeletal Mechanobiology	Séguin
13	Apr 3	Student debate #6 (tissue engineering) Student debate #7 (MSK biomechanics)	Grol/ Séguin

7. Participation and Engagement



- Students are expected to participate and engage with lecture content as much as possible.
- Students are expected to read all debate papers before class and participate in the class discussion following presentations.
- Students can also participate by interacting in the forums with their peers and instructors.

8. Evaluation

Below is the evaluation breakdown for the course. Any deviations will be communicated.

Assessment	Format	Weighting	Due Date
Online quizzes	Multiple choice / short answer	15%	throughout term
Midterm test	Short and long answer	30%	Feb 28, 2024
Debate presentations	Oral Presentation	15%	throughout term
Final exam	Short and long answer	40%	TBD

The midterm test and final exam will consist of short answer questions based on lecture materials, any information posted on OWL, and any assigned readings as well as one long-answer essay format question. The final exam is cumulative, but with emphasis on the material taught after the midterm.

Online quizzes will be posted on OWL following each debate, and remain open for 1 week. Questions will be based on the debate papers, including relevant methodologies, results, and overall discussion of the debate topic. Quizzes will be open book, but must be completed by each student individually. Quiz answers will be graded as submitted written assignments and assessed for textual similarity. Detection of plagiarism will result in a grade of 0.

The structure and objectives of the in-class debates are posted on OWL.

In the case of a student absence on the day on their schedule debate presentation, students will be expected to prepare a 3-4 page (~1,500 word) "News and Views" style report on the 2 assigned scientific journal papers (i.e. both sides of the debate). Examples of such "News and Views" reports can be found at: <https://www.nature.com/nature/articles?type=news-and-views&year=2019>. This "make-up" assignment will be due 1 week after schedule debate presentation.



- All assignments are due at 11:55 pm EST unless otherwise specified.
- Written assignments will be submitted to Turnitin (statement in policies below)
- Rubrics will be used to evaluate assessments and will be posted with the instructions.
- A student may not receive the same grade as their group members if it is determined that the distribution of work was not equal.
- After an assessment is returned, students should wait 24 hours to digest feedback before contacting their evaluator; to ensure a timely response, reach out within 7 days.

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading. The table below outlines the University-wide grade descriptors.

A+	90-100	One could scarcely expect better from a student at this level
A	80-89	Superior work which is clearly above average
B	70-79	Good work, meeting all requirements, and eminently satisfactory
C	60-69	Competent work, meeting requirements
D	50-59	Fair work, minimally acceptable
F	below 50	Fail

Information about late or missed evaluations:

- Late assessments without accommodation will be subject to a late penalty 10 %/day.
- Late assessments with accommodation should be submitted within 24 hours of the end of the accommodation.
- One make-up test will be scheduled within 48-72 h of the midterm OR the weight of the missed test will be transferred to the final exam (only with permission of course coordinator).

- If a make-up assessment is missed with documentation, the student will receive an INC and complete the task the next time the course is offered.

9. Communication:



- Students should check the OWL site every 24 – 48 hours.
- Students should email their instructor(s) and teaching assistant(s) using OWL or email.
- Emails will be monitored daily; students will receive a response in 24 – 48 hours.
- This course will use OWL forum for discussions.
- Students should post all course-related queries on the discussion forum so that everyone can access the questions and responses.

10. Office Hours:



- Office hours will be held in-person or remotely using zoom.
- Office hours will be scheduled as requested and booked.
- Office hours can be either individual or group.

11. Resources



- All resources will be posted in OWL.
- NO required textbook.
- NO required study guide.

12. Professionalism & Privacy:

Western students are expected to follow the [Student Code of Conduct](#). Additionally, the following expectations and professional conduct apply to this course:

- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared.
- Recordings are not permitted (audio or video) without explicit permission.
- Permitted recordings are not to be distributed.
- Students will be expected to take an academic integrity pledge before some assessments.



Western is committed to providing a learning and working environment that is free of harassment and discrimination. All **students**, staff, and faculty have a role in this commitment and have a responsibility to ensure and promote a safe and respectful learning and working environment. Relevant policies include Western's [Non-Discrimination/Harassment Policy](#) (M.A.P.P. 1.35) and [No Discrimination/Harassment Policy – Administrative Procedures](#) (M.A.P.P. 1.35).

Any **student**, staff, or faculty member who experiences or witnesses' behaviour that may harassment or discrimination **must report the behaviour** to the Western's [Human Rights Office](#). Harassment and discrimination can be human rights-based, which is also known as EDI-base (sexism, racism, transphobia, homophobia, islamophobia, xenophobia, antisemitism, and ableism) non-human rights-based (personal harassment or workplace harassment).

13. How to Be Successful in this Class:

Students enrolled in this class should understand the level of autonomy and self-discipline required to be successful.



1. Invest in a planner or application to keep track of your courses. Populate all your deadlines at the start of the term and schedule time at the start of each week to get organized and manage your time.
2. Make it a daily habit to log onto OWL to ensure you have seen everything posted to help you succeed in this class.
3. Take notes as you go through the lesson material. Keeping handwritten notes or even notes on a regular Word document will help you learn more effectively than just reading or watching the videos.
4. Connect with others. Try forming an online study group and try meeting on a weekly basis for study and peer support.
5. Do not be afraid to ask questions. If you are struggling with a topic, bring it up in class, check the online discussion boards or contact your instructor(s) and or TA.
6. Reward yourself for successes. It seems easier to motivate ourselves knowing that there is something waiting for us at the end of the task.

14. Western Academic Policies and Statements

Absence from Course Commitments

A. Absence for medical illness:

Students must familiarize themselves with the [Accommodation for Illness Policy](#).

A student seeking academic accommodation for any **work worth less than 10%** must contact the instructor or follow the appropriate Department or course specific instructions provided on the course outline. Instructors will use good judgment and ensure fair treatment for all students when considering these requests. You are not required to disclose details about your situation to your instructor; documentation is not required in this situation, and you should not send any pictures to your instructor.

If you are unable to meet a course requirement for any **work worth 10% or greater** due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Academic Counseling as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. Please note that the format of a make-up test, exam, or assignment is at the discretion of the course coordinator.

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found at: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

B. Absence for non-medical reasons:

Student absences might also be approved for non-medical reasons such as religious holidays and compassionate situations. Please review the policy on [Accommodation for Religious Holidays](#). All non-medical requests must be processed by Academic Counselling. Not all absences will be approved; pay attention to the academic calendar and final exam period when booking any trips.

Accommodation for Religious Holidays

The policy on Accommodation for Religious Holidays can be viewed [here](#).

Special Examinations

A Special Examination is any examination other than the regular examination, and it may be offered only with the permission of the Dean of the Faculty in which the student is registered, in consultation with the instructor and Department Chair. Permission to write a Special Examination may be given on the basis of compassionate or medical grounds with appropriate supporting documents. To provide an opportunity for students to recover from the circumstances resulting in a Special Examination, the University has implemented Special Examinations dates. These dates as well as other important information about examinations and academic standing can be found [here](#).

Academic Offenses

“Scholastic offences are taken seriously, and students are directed [here](#) to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence.

Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Accessible Education (AE) at 661-2111 x 82147 for any specific question regarding an accommodation or review [The policy on Accommodation for Students with Disabilities](#).

Correspondence Statement

The centrally administered **e-mail account** provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner. You can read about the privacy and security of the UWO email accounts [here](#).

Discovery Credit Statement

Students are permitted to designate up to 1.0 Discovery Credit course (or equivalent) for pass/fail grading that can be counted toward the overall course credits required for their degree program. The details of this policy and the deadlines can be found [here](#).

Turnitin and other similarity review software

All assignments will be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. Students will be able to view their results before the final submission. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and [Turnitin.com](#).

15. BMSUE Academic Policies and Statements

Cell Phone and Electronic Device Policy (for in-person tests and exams)

The Schulich School of Medicine & Dentistry is committed to ensuring that testing and evaluation are undertaken fairly across all our departments and programs. For all tests and exams, it is the policy of the School that any electronic devices, i.e., cell phones, tablets, cameras, or iPod are strictly prohibited. These devices **MUST** be left either at home or with the student's bag/jacket at the front of the room and **MUST NOT** be at the test/exam desk or in the individual's pocket. Any student found with one of these prohibited

devices will receive a grade of zero on the test or exam. Non-programmable calculators are only allowed when indicated by the instructor. The program is not responsible for stolen/lost or broken devices.

Copyright and Audio/Video Recording Statement

Course material produced by faculty is copyrighted and to reproduce this material for any purposes other than your own educational use contravenes Canadian Copyright Laws. You must always ask permission to record another individual and you should never share or distribute recordings.

Rounding of Marks Statement

Across the Basic Medical Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g. a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark “bumping” will be denied.

16. Support Services

The following links provide information about support services at Western University.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

[Academic Counselling \(Science and Basic Medical Sciences\)](#)

[Appeal Procedures](#)

[Registrarial Services](#)

[Student Development Services](#)

[Student Health Services](#)